DOCUMENT RESUME

ED 436 286 PS 028 137

AUTHOR	Lee, Christine Kim-Eng; Chew, Joy; Ng, Maureen; Hing, Tey Sau
TITLE	Teachers' Use of Cooperative Learning in Their Classrooms: Case Studies of Four Elementary School Teachers.
SPONS AGENCY	National Inst. of Education (ED), Washington, DC.
PUB DATE	1999-04-00
NOTE	22p.; Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Quebec, Canada, April 19-23, 1999).
CONTRACT	RP-10/93CL-4001009
PUB TYPE	Reports - Evaluative (142) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Case Studies; Classroom Techniques; *Cooperative Learning; Elementary Education; *Elementary School Teachers; Foreign Countries; Instructional Effectiveness; Instructional Innovation; Interviews; Journal Writing; Motivation; Observation; Professional Development; Teacher Attitudes; *Teaching Methods
IDENTIFIERS	Singapore; Teacher Journals

ABSTRACT

Four teachers at a Singapore Catholic elementary school implemented cooperative learning over a period of a year. The teachers received inservice training on cooperative learning and worked closely with a university research team as they implemented cooperative learning for social studies and other subjects. The teachers were subsequently interviewed in the middle and at the end of the project and observed three times in their classrooms. Teachers also maintained a journal regarding their experiences. Four major themes were identified within the four case studies: (1) the teachers' motivation for adopting cooperative learning in the classroom; (2) the concerns and difficulties faced by teachers; (3) the effects of this innovation on their pupils' learning; and (4) how the use of cooperative learning affected each teacher's own professional development. The findings of the research underscore the need for strong institutional support if teachers are to be motivated to use cooperative learning in a systematic and sustained manner. (Contains 10 references.) (KB)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 436 286

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Christine Lee

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Teachers' use of cooperative learning in their classrooms: case studies of four elementary school teachers

Christiine Kim-Eng Lee, Joy Chew, Maureen Ng & Tey Sau Hing[1]
National Institute of Education
Nanyang Technological University
Singapore

Abstract

This paper reports on the experience of four teachers of a Singapore elementary school who implemented the use of cooperative learning over a period of one year. The teachers received in-service training on cooperative learning and worked closely with the university research team as they implemented cooperative learning for social studies and other subjects. They were subsequently interviewed and observed. Each teacher's experience is written up as a case study. The paper focuses on four themes: the teachers' motivation for adopting cooperative learning in the classroom, the concerns and difficulties that they faced, the effects of this innovation on their pupils' learning and how the use of cooperative learning affected their own professional development. The research finding of the research project underlines the need for strong institutional support if teachers are to be motivated to use cooperative learning in a systematic and sustained manner.

Paper presented at the Annual Meeting of the
American Educational Research Association
19 to 23 April 1999, Montreal, Canada

---

[1] Christine Lee, Maureen Ng and Tey Sau Hing are lecturers in curriculum studies courses in social studies in the Division of Geography, School of Arts. Joy Chew teaches curriculum development and implementation in the Division of Policy and Management Studies, School of Education. This research was supported by a grant from the National Institute of Education (RP 10/93CL – 4001009). Correspondence can be addressed to Dr Christine Lee, National Institute of Education, 469 Bukit Timah Road, Singapore 259756, Email: clee@nie.edu.sg

PS 028137

BEST COPY AVAILABLE

Teachers' use of cooperative learning in their classrooms: case studies of four elementary school teachers

INTRODUCTION

The Curriculum Development Institute of Singapore[2] has actively promoted the use of cooperative learning (CL) in schools by incorporating cooperative learning activities in the revised curriculum materials for schools over the past decade. For example, CL activities are built into the teachers' guide for the social studies curriculum in primary schools. The National Institute of Education as the sole teacher education institution in Singapore has been actively training both pre-service and in-service teachers in the use of CL in Social Studies in recent years. While many Singapore teachers have been using some form of groupwork as part of their teaching repertoire, the kind of groupwork labeled as "cooperative learning" is only beginning to find its way into schools. Even then, few schools are known to have embraced CL for subject learning. Teachers in Singapore schools are far more comfortable using whole-class teaching and tend to limit groupwork for short lesson activities.

The implementation of CL in the classroom requires teachers to teach in a qualitatively different way. It is a complex instructional approach which requires teachers to change their roles from being a "director of learning" to an "organizer and facilitator of learning". It is also important that teachers understand the principles behind CL and show a commitment to put these principles into practice.

The effectiveness of CL as an instructional approach has been well-documented in the United States, Israel and other countries. Several research reviews and recent meta-analyses support the effectiveness of CL in producing both academic and social gains in classrooms such as academic achievement, classroom climate, self-esteem and interethnic relationships. (Sharan, 1980; Slavin, 1989/90; Johnson, Johnson, & Maruyama, 1983). According to Bossert (1989), the benefits of CL hold for students at all age levels, for all subject areas, and for a wide range of instructional tasks such as rote-decoding, retention and memory skills as well as problem-solving.

Slavin (1987) defines CL as a form of classroom organisation in which students work in small mixed-ability groups to help one another learn. The groups usually have four members - one higher achiever, two average achievers, and one low achiever and are also mixed in terms of race and gender. CL differs from competitive and individualistic learning. In competitive learning, students work against each other to see who is the "best". In individualistic learning, students work on their own without paying attention to other students. To implement CL successfully in the classroom, teachers must structure:

- positive interdependence in which group members perceive that their success is linked to that of the others in the group.
- individual accountability, in which each group member is accountable for both learning the assigned material and helping other group members learn.
- face to face interaction among pupils.
- teaching of social skills directly and motivating pupils to use them.
- group processing in which pupils discuss how well they are achieving their goals and reflect on the group process (Johnson & Johnson, 1994).

Rich (1990) suggests that CL remains an instructional strategy which is seldom used in a systematic manner for an extended period of time. This can be partly attributed to the lack of attention of curriculum developers and project initiators to the role of teachers in the implementation process. Rich argues further that CL is perceived by most teachers to be *ideologically incongruent* with their beliefs about the goals of schooling and the process of knowledge acquisition. Fullan (1991) suggests that the most important problem in implementation efforts is the user's construction of meaning. In other words, as teachers learn to use CL in their own classrooms, they begin to construct their own understanding of how it works and in the process, they will transform what is learned and be themselves transformed. He argues that we need to get away from a technical view of the process of implementation and not discuss the problem only in terms of external factors. Rather, we need to understand the people involved in the implementation process, i.e., the teachers. It is thus clear that an understanding of the experiences of teachers in implementing CL is important if the use of CL is to be sustained in classrooms.

This paper describes the experiences of four Social Studies (SS) teachers as they begin their journey in the use CL for their primary classrooms over a one year period. Our objectives in describing the experiences of these four teachers are to better understand the following: (i) their motivations for adopting CL in the classroom, (ii) their concerns and difficulties in learning how to use CL and (iii) the effects of the CL experience on their pupils and (iv) how the use of CL has affected their own professional development. The way we understand teachers' experiences as they implement CL will help teacher training agencies to devise more useful forms of teacher support.

THE SETTING AND THE TEACHERS

The research team worked with four primary five teachers over the course of an academic year to implement CL in their SS lessons. These teachers, Jenny, Jane, Mary and Molly, teach in a Catholic convent school with a school population of about 1,700 pupils. The school is a well-established and popular institution in the central district of Singapore and has a good representation of pupils from the different ethnic groups. 80% of the pupils are Chinese, 14% are Indians, 2% Malays and 4% are Eurasians. A large

majority of pupils come from English speaking homes (82%). At the end of the fourth year, pupils are streamed according to academic and language learning ability into three streams: English-Mothertongue 1, English-Mothertongue 2, and English-Mothertongue 3 classes.[3] Jane teaches the top class of EM1 pupils. Mary and Molly teach the EM2 pupils and Jenny has a mixture of EM2 and EM3 pupils. The four teachers were selected for the CL project by the school principal who rated them as being receptive to school change and more likely to implement CL structures in their lessons.[4]

The school-based project on CL was undertaken by four lecturers at the National Institute of Education and it received strong support from the incumbent school principal in 1995. CL was introduced to the school four years earlier by the previous principal who personally conducted several school-based workshops for all her teachers. She was succeeded by another principal in 1992 who was equally enthusiastic about promoting pupil-centred learning. Thus the seeds for experimenting with CL had been sown in the school through staff development efforts initiated by the two principals. Two of the four teachers in the project, Jenny and Molly, had also attended a 30-hour inservice course on "Cooperative Learning for Primary Social Studies Teachers" at the National Institute of Education in 1994. Additional workshops on CL were provided to the teaching staff at the end of 1994 and in the middle of 1995 when the CL project began.

Each of the four teachers had different kinds of training in relation to CL. A teachers' manual describing the principles of CL, CL structures/strategies and ideas for team-building were provided. Social Studies (SS) was chosen as the subject for introducing CL structures since the research team had expertise in develoing training programmes and curriculum materials for CL groupwork. The teachers were also given CL curriculum units for primary five SS lessons developed by the research team. Briefings with teachers were held prior to the implementation of each curriculum unit throughout the year. During these meetings, the teachers were encouraged to give feedback on the prepared materials and to adapt them according to the needs of their classes.

METHOD OF DATA COLLECTION AND ANALYSIS

The case studies that are reported in this paper are based on data obtained from teacher interviews. The teachers were interviewed twice during the year, in the middle (April 1995) and toward the end of the project (October 1995). Our analysis of the data was guided by the following themes: motivation and educational goals; concerns and difficulties in implementation; and perceived effects of CL on the pupils and teachers. Each teacher was observed three times during the project in February, April, and August 1995. They were also requested to keep a journal of their experiences of CL.

PRELIMINARY ANALYSIS OF THE FOUR CASES

Jenny (EM2/EM3) had been experimenting with the CL approach in her own classes prior to the project. Jane (EM1), Mary (EM2) and Molly (EM2) were first-time users of the approach. Given their personal beliefs, values and philosophy about the role of the primary school teacher in a competitive education system of Singapore, each of them is likely to view her own experience of using CL differently. Each teacher's experience and use of CL in SS lessons is presented below as individual case studies.

Jenny Lee: Developing Expertise for Cooperative Learning

Jenny was in the thirteenth year of her teaching at the time of the CL project. Besides being the form teacher of a Primary 5 EM2/3 class, she was the SS coordinator of her school, a role that she carried out with much enthusiasm and professional pride. As a teacher, her participation in the CL project met her need to continue acquiring new ideas on classroom instruction for working with pupils of different ability. Throughout her teaching career, she had taught pupils of differing academic abilities, from the high achieving EM1 pupils, to the 'average' ability learners in the EM2 classes and the lower ability pupils in the EM3 academic stream. A very experienced teacher, Jenny was also innovative in her teaching approach. Jenny was quick to experiment with the simpler CL structures and social skills in her classroom teaching after an exposure to cooperative learning workshops conducted by her former principal. She found herself rejuvenated by the experience. But it was not until 1995 that she had the opportunity to try out the more complex structures like the jigsaw. When asked how she felt initially about becoming involved in the CL project, she said that she was very excited at the prospect of learning and implementing the more complex structures. To quote her:

> *I have always been excited about cooperative learning. So I thought it would be a good opportunity for me to learn more because what I've learnt in the past is just a bare minimum, not all the structures. I was waiting to learn more about the structures and putting them into practice*

Jenny's involvement in using CL strategies in 1995 took on greater significance as she was then in the position to experiment using them for her Primary 5 class of 31 lower ability pupils. By this time in her teaching career, she had reached the conclusion that the traditional approach of whole class teaching was not helping the weaker pupils. Like other teachers, she faced the difficulty of trying to motivate them to take SS seriously as a subject. This view was prevalent among her girls: "SS is not an examination subject so who cares about it". She had tried to inject more interest in the subject but was not succeeding. So she welcomed the opportunity to implement CL for SS in a more formal way as she had learnt about its potential to help the weaker pupils both academically and socially. Her keenness to participate was further aided by her conviction that schooling was more than about getting good academic results for her pupils.

At the same time, she was realistic about the likely effects of CL for the academic improvement of weaker pupils.

> *For me, I do it for both reasons...I'm trying it for the social skills part of it for this sort of pupils. I know that for them to improve a lot academically would take a miracle. But because I want them when they leave school to be able to socialise with others and when they have a job, to work well with others. Academically, they have not improved that much. Some of them will but the majority will not.*

With her very positive orientation toward groupwork, Jenny introduced it to her Primary 5 pupils on a regular basis not only for SS but for also for English and Math classes. She started with simpler structures like Listen-Think-Pair-Share, Numbered Heads Together and Sequential Roundtable and then included the Jigsaw structure. She found that the jigsaw strategy was especially useful for English comprehension lessons as she could get her pupils to process the reading passage in smaller parts rather than be daunted by having to go through the whole comprehensive reading passage. For SS periods, she soon found her pupils changing in their attitude towards their lesson activities: they began to like the subject and wanted to have more CL sessions. Since SS is a non-examinable subject, she found that there was more scope to use CL for groupwork activities which required a longer time to complete. She was not worried about taking up three to four periods to engage her pupils in cooperative activities using the Jigsaw structure, and in the process to allow pupils in the expert group to gain confidence as they attempted to practise teaching what they had learnt in their tasks. When asked if time was a constraining factor, she expressed that she was more than prepared to experiment all facets of CL as she had noted that it helped her role as a learning facilitator. As she continued with CL for SS, English and Math, she discovered that there was a remarkable difference in the way her pupils were learning together as is captured by her observation:

> *I see the kids working.... When I do cooperative learning, they are the ones who have to be on-task completely with the minimum of instructions. When I go around and they are really working, there and then I can see who's having problems and who not....So I like it that way.*

At the same time, Jenny experienced some challenges and difficulties in conducting CL lessons. The main challenge was that of trying to integrate pupils into their groups. Some of them had very strong personalities and found it difficult to work with their group members. Three pupils tended to dominate their groups' discussions and were not prepared to listen to the other girls' opinions. They were academically stronger than their peers and showed impatience when slowed down by the rest of the members during group activities. Jenny responded to this kind of challenge by talking to these pupils individually and reminding them of the social skills they were seeking to promote. She felt that she was quite successful in influencing their behaviour. She also found friendship cliques forming among the Indian and

Chinese pupils which she wanted to discourage in a multiracial classroom. She dealt with it by changing the CL group members on a termly basis rather than allowing them to stay together for longer than five months. By the end of the year, she noted that there was more interethnic interactions among her pupils.

Another challenge that she faced was that of monitoring to see if pupils were making academic progress. When asked if CL groupwork was working in terms of the academic improvement of very weak pupils, Jenny felt optimistic that it would have positive consequences for all her pupils. By mid-October, after having worked with her class for an academic year, she saw that some had benefited academically as well. She also recognised that there were those who were academically weaker and that she would have to adjust her scheme of work and cut back on the coverage of the syllabus if they were to make reasonable progress.

Cumulatively, over the last few years as she continued experimenting with CL structures, she found herself becoming more proficient in managing the groupwork processes and in facilitating pupil learning. Professionally she had grown. She had become more skillful in handling the CL structures and in responding to the problems that some pupils in her class had in adjusting to groupwork. When asked to evaluate her professional development for the year, she confirmed that she had grown as a teacher as this statement shows:

> *I'm a more confident teacher....I feel I'm a better teacher. I should say that from feedback given to me by the Principal and Vice-Principal based on the lessons they have seen me teach.*

Her experience of carrying out CL lessons had resulted in her professional renewal, an experience that had energised her further in her teaching career. Asked about how she would carry on with CL for her classroom teaching, she said that she was certain about continuing with it for her class teaching the next year as she had expected that it would take longer for CL to have its impact on the academically weaker pupils. She was also prepared to demonstrate how CL structures could be taught to pupils by conducting staff workshops for her colleagues. This in fact took place in June 1995 during the school vacation break when she ran a workshop for teachers at the request of her Principal. Clearly, for Jenny, she had acquired a mastery of the skills of CL groupwork and was recognised by her colleagues as the in-house expert in CL.

Jane Tan: Discovering the Potential of Cooperative Learning

Jane started off in the CL project with a sense of misgivings about having been chosen by her principal. She had taught for only six years and was the most junior of the four teachers, but her effectiveness as a classroom teacher was recognised by her colleagues when she was assigned to teach the only

Pr 5 EM1 class in 1995. This was a high ability class whose pupils could be expected to perform well in their primary school leaving examination. Jane initially saw the CL project as an additional imposition on her teaching responsibilities for that year.

> *....we are already heavily burdened.....this additional project would mean more work for me.*
> *...we are writing the schemes of work for English and Maths, so that's already heavy and Science is also a new syllabus and everything is new.*
> *... with the new topics we have to look for more materials and rethink the way we teach them.*

The only incentive for participating in the CL project was that she would be given the complete set of lesson plans and resources which she would have to introduce for her social studies lessons.

In some ways, Janne was given no choice but to experiment with CL for SS as part of her involvement in the project. She had been trained in CL in school-based workshops but had not ventured to try them out in her classroom prior to the project:

> *We were already aware of it but at that time, we didn't really use the structures because we weren't comfortable with them, I guess.*

> *...I suppose when you're outside, you're quite apprehensive, but when you get into it, then you realise, it's not so bad after all.*

> *....I guess it's not so bad because it works.*

Forced to use CL in her SS lessons, Jane found herself discovering that the new method worked. The phrase *"it worked" or "it works"* was repeated by her at least five times in the two interviews we had with her. She found her pupils were *"more forthcoming, more outspoken compared to in the past"*, and willing to volunteer to represent their groups and present their reports orally.

> *I noticed that it helps improve their relationship amongst the group members. They work better. They have become more responsible in a way, more responsible of their own selves.*

> *When you give them a group task previously, they would say they don't want to do it and they have have a lot of arguments but now they have learned these structures and the social skills that we taught them about encouraging one another and the other one, disagreeing agreeably. You find them sort of talking things out rather than just arguing.*

Jane was also impressed by the quality of work her pupils' produced. She never realised that *"they could come up with something so good"* when the girls worked on a group project. Comparing CL and the traditional method she used previously, she felt that her pupils *"enjoyed this method more because we are teaching more and they are more involved"*.

In the first interview in April, Jane already showed some conviction of the effectiveness of the CL approach. She started to introduce some simpler CL structures for English and Science lessons as well, and this was motivated by the aim of making sure that her pupils would have more practice in acquiring the social skills that CL groupwork could promote. In the second interview in October, she had this to say:

> *I find that it is helpful in a way because I've managed to use the strategies in my Maths and Science classes as well, and the girls are used to it. It works because everyone is involved and everyone participates, and we don't have any sleeping members in the group like we used to.*

When asked if she would continue with using CL in 1996, her reply was:

> *Definitely, because I also use it during Math and Science lessons and it works, not for every lesson because I don't think it is possible but for some lessons where it is feasible to use some of other different activities like the jigsaw.*

But then again, the extent to which Jane would continue to use CL beyond the first year for SS and other subjects would depend on the availability of additional resources and curriculum support. She was obviously concerned that she might not have the time to prepare the necessary materials on her own.

Jane found that she had little difficulty in using the cooperative learning structures with her pupils in her class. The prepared curriculum materials made available by the research team were detailed enough and easy to follow:

> *...I don't mind carrying out the lessons because the lesson plans are really beautiful and they work very well.*

Initially, the most difficult part of using CL was "getting the girls to understand the structures and learning to use them". She found the need to explain to her pupils why she was using CL structures in her teaching instead of the usual chalk-talk method. At the beginning, she found Sequential Roundtable difficult to implement because she had to constantly remind the girls not to interrupt in when it was not their turn to speak. But with time, the pupils became very comfortable with the structures and knew what was

expected of them. For example, the girls naturally faced each other when they were given group work. They were familiar with their roles as the gatekeeper, the praiser, the coach etc.; and in Numbered Heads Together, the girls knew exactly what to do.

The issue of a lack of curriculum time surfaced several times in the interviews. Jane coped with this by compressing her SS lessons from two periods of one hour into one period:

> *...if it is really that time-consuming, then we will sort of like cut down on our own to suit our classes.*

> *...especially in Term 3 when we had a lot of disruptions in curriculum time and public holidays, etc. I don't want to miss out on the whole lesson altogether so what I tru to do is to compress two lessons into one.*

Due to the limitation of time she did not insist that pupils spend some time at the end of each CL lesson to discuss how successful they were in working as groups, an aspect that was encouraged by the CL trainers. She had attempted some group processing at the initial stage of implementing CL structures but decided to abandon it when it could not be fitted into the time available.

On the whole, the CL experience has been positive for Jane. Her expectations of learning *"something new, a new teaching method"* was met to a certain extent. As she puts it,

> *....it has opened a new avenue for me when it comes to teaching method... I guess it is not too bad after all. It is something good because to me it benefits the pupils and I see them working better. In that sense then it benefits me as well.*

Her experience of CL in the project has given her a new dimension on what teaching is all about:

> *Teaching is not only teacher-centred; it's more pupil-centred and it benefits the teacher and also the pupils because actually in the classroom, it is the pupils who should be participating more instead of just having teacher-centred lessons.*

Mary De Souza: Worrying About Added Workload for Teachers

Mary began the year with great apprehension when she learned that she would be one of the teachers participating in this research study. Her concerns were not unusual. She could do without the additional workload it entailed. Far deeper, her initial resistance reflected a sense of inadequate preparation. Although she was a very experienced school teacher, having

taught in the primary school for 13 years, CL was a new and different teaching approach. Moreover, due to illness, she had missed the school-based training in CL which her peers had received.

Given little choice in the matter, she comforted herself with the thought that she would not be alone in this. There would be three other teachers involved, so perhaps she could count on their help and support when needed. This support she did receive as she later said :

> *Jenny helped me out a bit. Molly also helped me by telling me certain strategies, and I read up. And of course Dr Lee and yourself gave me some tips on how to carry this out... and we also attended a seminar with our principal where there was some training on this.*

Although she was initially uncertain about the approach, Mary quickly developed a strong liking for CL. She could see changes in her lessons and her pupils :

> *Before, Social Studies was such a drag - something which we just did because we had to do it... And everybody rushed through or tried to use the subject period for other lessons. It [cooperative learning] definitely has created greater interest in the subject.*
>
> *I think it's very good for the kids because it's really built up their team spirit... you know they all want to be the best group and they help each other... It made them feel very appreciated, each and every member and I made it a point to tell them "No put-downs, every member is special"... and I found that the quiet girls came up and managed to speak and to present.. they were so thrilled that they belonged to a group.*

In conversations with Mary, she spoke enthusiastically about the positive effects on the children's academic, personal and social development. In her case, the benefits it could have on the children, particularly the shy pupils and academically weaker ones, was the driving force :

> *Having been in this project, I see that it has enhanced the learning skills in my pupils - they have developed a deeper understanding of the content in Social Studies.*
>
> *In Numbered Heads Together... you know that everybody is playing a role. You know none of them is neglected, even the quiet ones. Sometimes you just forget the quiet ones you know, when the others are more vocal.*
>
> *To me, it matters very much that the ones that are slower, who are quiet speak up and are able to present something. They are so happy to present something the group has done because they know it all there. It has helped develop self-esteem in the weak ones.*

... the satisfaction of seeing every pupil taking part in the social studies lesson... the satisfaction for me is seeing my girls becoming accountable for what they have done - like their projects have improved so much. They all want to hand in something good, and it makes you feel good that your teaching has really benefited them.

Mary's concerns about using CL were primarily the heavy workload, the burden of which was already a strain. She pointed to the extra time needed for planning lessons and developing resource materials, and if these tasks are to be undertaken by the individual teacher, the teacher might simply revert to the traditional teaching approach. In her view, practical needs must be taken care of, if the teacher is to seriously think about using such a teaching strategy:

I think teachers face that problem - there are no resources, and to go out and look... I think that is where teachers say they don't want to do it because they know that if they suggest anything, they have to stay back and do the planning... If not for you all calling us and coming down to see us, it would have just died off. Like I said, this is not the only subject, we've got all the other subjects to think of too. So sometimes you just teach the whole class instead of using these methods.

The question of using CL in teaching English, Science and Math brought out a similar concern of work practicalities. Mary continued to believe in the value that group learning can have for weaker pupils, as she observed in her Math class :

For Maths I wanted so much to try cooperative learning as I had so many weaker students in my class and I could see it has enhanced the learning of the pupils... but the time was so short. But on one occasion when we had a four-step problem to do,... I made them do the Sequential Roundtable. I picked out the ones who were a bit weak and I said "I want these girls to do the first step, and the second step is to be done, and the third and fourth, and if you find that a step is wrong you have to go back and teach it to the person." They did it and they were so excited. Of course it took time and I only managed to do 2 sums. But when I gave them the test the next day with these 2 sums, and of course I changed the figures - I had most of them scoring 10/10 which was a very great achievement!

Being involved in this project and receiving training in CL had given her a hands-on experience with the approach. It certainly helped her to develop a heightened understanding of groupwork and acquire the professional jargon. These in themselves contributed to her professional development.

Molly Lim: Guarded Optimism about the Effectiveness of CL

Compared to the other three teachers, Molly was the most experienced in classroom teaching, having taught in the primary school level for 29 years. She was relatively new at teaching SS. 1995 was her third year of teaching this subject. Her knowledge about CL as a teaching model went back to 1990 when she attended two school-based seminars on CL. More recently, she was also one of the two teachers who completed a 30-hour in-service course on CL for teaching SS. While she was interested in learning about CL, there was no compelling reasons for her to experiment with it in her own classes before 1995. When identified for the CL project, Molly braced herself for the new experience but with some apprehension as she felt that she was only "slightly knowledgeable" about it. By then, though, she felt that she was quite ready to "try out some of the strategies". She knew that she would be expected to depart radically from a teacher-centred approach of teaching, a method that she felt most comfortable using. On the whole it was a big leap for her as the following comment suggests:

> *...all my teaching career, I have been using the old approach...teacher-centred: you listen to me and I teach, you see. This new approach, well, it is something I would say is interesting but at the same time quite challenging. And I did try out some of the strategies and I could see that the pupils were quite responsive because they were able to talk among themselves and discuss a lot of classroom activities.*

She began first by learning a new set of professional terms about CL structures which she used to train her pupils with great diligence and perseverance.

> *Initially, it's new to the pupils, so I have to keep telling them, "All right, go to the Social Studies groups", and then I've to brief them, "Today, these are the skills you are going to learn". If it is a new one, maybe I've to explain. In fact, for the first month we don't go right into the cooperative learning. We introduce certain skills to them, little skills, then they are quite used to it, and I think that from the second month onwards I began with the CL lessons. I'll say, "Today, I want to see you practise the skills", so they are quite OK.*

After experimenting with CL for SS over four school terms, Molly emerged from the experience with a first-hand pedagogical knowledge of how to proceed with structured groupwork activities. She had also become more aware about the potential of CL in helping her pupils to work together effectively. As CL emphasised the promotion of social skills, she was clearer about the principles of CL and what to expect from the structures. Her effort in faithfully following the lesson plans for group projects paid off handsomely when she saw the high level of motivation for cooperation among group members and the improved quality of their group products. She also noted

the difference in her pupils' response towards project work during that year compared with her earlier attempts to encourage such group activity.

> *I can see that for project work they are very keen because there is a direction. They know exactly what to do. Previous years, because they are told....I had asked the girls to do a project, so we just give them a title because I don't even know how to set a project work for them as we have not attended courses and all that. So, after this, we can actually guide them in this and there is a sense of direction. So they know how to go about it and we can see the results.*

Another indication of Molly's deeper understanding of CL was her discovery that the teacher would still be actively involved in the instructional process during groupwork. This was an important realisation for her as it was congruent with her belief that the teacher should be actively managing and directing pupils' learning.

> *I feel for CL strategies the teacher is equally active. We still have to move around and we have to ask them in individual groups. We are not just doing nothing...we are equally active.*

When asked to evaluate how effective groupwork discussion was in generating learning among pupils, she expressed some reservation about relying completely on the use of CL, especially if pupils did not have enough content knowledge to deal with the subject matter at hand.

> *...Sometimes, I do find that it is not very effective. For example, when you are introducing a lesson and to ask them to sit together and brainstorm because they do not know the topic that well. It is new to them and they need to learn with inputs from the teacher. Up here [the teacher pointing to her head] how much can they extract? Their knowledge is so limited. So what they have contributed is very shallow. It's more for them a trigger activity to get them interested in what is going to be taught. That's why I think cooperative learning cannot be applied in every lesson because of the content knowledge that is required.*

At the same time, she was pleased with the much higher level of involvement of her pupils during groupwork. In commenting on their positive response to SS lessons as a result of the use of CL strategies compared to their earlier passivity, she noted that they really enjoyed and looked forward to the opportunity to discuss learning tasks instead of working individually. She knew well the psychology of her pupils when it came to making mistakes in oral or written work and appreciated that CL was making a great difference in their classroom behaviour.

> *In fact they [the pupils] look forward to Social Studies lessons because they know that's the time when they can really have a*

chance to communicate, a lot of discussion and talking and this is what they like. Whereas if they are asked to contribute and answer on their own only the very few who know will put up their hands. The others are afraid if they make a mistake so they would rather not contribute.

They are less guarded because there is accountability, you see, that's the thing. "I am contributing, you know, so if the composition is no good, I'm not the one who is targeted at", you see, " because there are four of us. So I am not the one being identified". "Oh, this is from me", you see. So they are willing to contribute.

She also learnt that lesson plans for CL had to be prepared in great detail so that the teacher would be able to proceed from one activity to the next with the aid of relevant resources "to keep the children so well occupied from the first to the last minute, otherwise it will be a waste of time." It was this aspect of curriculum planning that would deter her from using CL more extensively in 1996 for all her subjects as the teacher would have to spend more time to work on her lesson plans and resource materials. She also felt that it would be unrealistic for her to give up direct teaching altogether, with or without the use of CL..

Quite often we are actually teaching. We need to teach upfront. It's not because I don't want to find out whether they understand my lessons or not. There are some things we need to teach... and we have to cover the syllabus. Then we'll have to find out whether they know the stuff by giving them little tests, and the remedial will come if there is a need if they don't do well in the tests.

Molly had come away from her recent experience with CL groupwork not totally persuaded that her EM2 pupils could manage their own group learning. They would still need to be guided by the teacher during discussions *"because they do not know that they have actually come up with something interesting".*

The individual stories of the four teachers raise several questions for the implementation of CL:

- Would the teachers have adopted CL on their own if not for the project?
- In learning to use CL in their classrooms, what is the nature of their concerns and how do they cope with these concerns?
- Would their use of CL be sustained after the project has ended?

These questions will be addressed in the next section of the paper.

DISCUSSION

Teacher motivation and educational goals

Rich (1990) suggests that there are ideological impediments to teachers accepting CL and using it in their classrooms. These impediments are teachers' beliefs about the purposes of schooling and learning. Based on his experience of working with teachers in Israel, Rich found many teachers unwilling to adopt CL in their classrooms, even after reasonably well-executed workshops. Jane, our teacher in the study echoed the same sentiments about the adoption of CL in the Singapore classroom:

> *if it is up to the individual (to adopt CL).....many of them are not going to do it unless it is enforced in the schools.*

CL is perceived by teachers as a method which places relatively equal or greater emphasis on achieving personal-social goals than academic goals. But to many Singapore teachers, academic goals take greater priority. CL also requires a radical reconceptualisation of the learning process in the classroom where pupils help each other learn. Many teachers still believe that learning is best accomplished when knowledge is transmitted from teacher to pupils. There exists then a lack of congruence between teachers' beliefs about education and learning and their perception of what cooperative learning can achieve. The lack of congruence may be one reason why many teachers choose not to use CL in the classroom and if they are forced to use it, will be likely to compromise on the quality of CL experiences for their pupils.

Rich's argument provides a useful framework for examining the motivations of the teachers in our study in use of CL. With the exception of Jenny, none of the teachers in the study took the initiative to experiment with CL in their classrooms prior to the project. All have had training in CL through school-based workshops earlier. It was only when they had little choice but to adopt CL as part of their school's involvement in the project that they began to implement it during the school year.

Jane and Molly were more cautious about adopting CL strategies fearing that pupils might not benefit academically from their use. For them, academic goals take greater priority. Jane as the teacher-in-charge of the EM1 class was fully conscious of school and parental expectations of the academic performance of her charges. As a result, she experimented with Jigsaw in her SS lessons but did not use the method in her math and science lessons. Since math and science are important subjects, she preferred to exercise control over what and how her pupils learn. She was uncertain that her pupils could help each other learn science and math concepts through the use of Jigsaw. Molly as a very experienced teacher found CL a refreshing change to her traditional teaching approach. While she acknowledged some positive effects on her pupils, particularly in the quality

of their project work and greater pupil participation, she did not think that CL was appropriate for every lesson and would continue her use of direct teaching methods in addition to CL. She did not seem totally convinced that her pupils were learning better with the CL approach.

It is interesting that Jane and Molly included an element of competition in their SS classes. Both felt that intergroup competition was necessary to motivate each group to perform well. To Jane, competition and cooperation were not opposing values in the classroom. This contrasts with Kohn's view that the use of competition may "defeat our best efforts to promote cooperation in the classroom, sending conflicting messages in the process and undoing much of what we have managed to achieve by the use of CL" (1991, p. 48). It is likely that the predominantly academic goals of Jane and Molly may limit their use of CL. In the case of Jane, she discontinued the group processing phase which is an essential component of CL. Molly made no attempt to change the membership of her groups during the year. When some pupils encountered problems in working with their peers on group projects, she allowed them to work individually than expect them to learn how to resolve such problems within their groups.

In spite of initial apprehension, Mary developed a strong liking for CL when she saw positive changes in the social skills of her pupils. Jenny was strongly motivated to use cooperative learning even before the project. She saw her involvement in the project as an opportunity for learning new forms of CL. In Rich's analysis, she would be the teacher whose ideological beliefs about the goals of schooling and the process of learning were very congruent with cooperative learning. As a teacher of a EM2/EM3 class, she recognised that "academically we are not the same....our brain power is different". For her, the potential of cooperative learning in developing social skills in her pupils was particularly attractive. The ability to work in a team which her pupils could acquire would be useful when they enter the job market.

Teachers' concerns and coping mechanisms

Using cooperative learning in the classroom posed several challenges and touched on some important teacher concerns. The most prevalent concerns were practical in nature - Will I be able to cope with the extra workload? Do I have the curriculum resources to use cooperative learning effectively? Where do I find the time to teach social skills and to conduct group processing?. How long should the groups be kept together? Other concerns were about the academic and social effects on pupils - Are pupils learning and mastering the content of the subject? Are the pupils improving in their social skills?

The teachers in this study were very experienced and competent in their classroom work. They had mastered classroom teaching skills and set clear expectations of academic and social behaviour of their pupils. Yet they felt assured only when told that curriculum materials would be prepared for them. With resource support, they were confident that they would be able to

implement the CL lessons as intended. One teacher reported that her fears were lessened by the promise of collegial support and assistance from the researchers so that she would not be left alone during the experiment. A more pervasive concern among the four teachers was whether they could cope with the additional workload of creating new curriculum materials if they decided to continue with CL after the year's project with the researchers.

More immediately, the teachers found themselves learning how to implement the CL structures and training their pupils on using it. The task concerns raised by two teachers related to getting pupils to understand the cooperative learning structures. All the teachers shared a common concern about the amount of time required for carrying out cooperative groupwork tasks during the three weekly lesson periods allocated to SS. One teacher coped with curriculum disruptions by compressing her social studies lessons and discontinuing her use of group processing. Another teacher used her Art and PE periods to complete the groupwork activities for SS. The third teacher tried her best to follow the prepared lesson plans because they were "so well-planned and covered quite a depth". She quite often found herself "overspending my (her) time and overlapping to the next periods". The fourth teacher was committed to making sure that she completed the whole cycle of cooperative learning activities in jigsaw, "right up to the end of group processing". She chose to complete the Jigsaw cycle all within a day with her pupils, knowing that if she had allowed them to continue the activity on the following day, they would have forgotten what they had done.

The teachers had little difficulty with the simpler structures like "Listen-Think-Pair-Share", "Sequential Roundtable" and "Numbered Heads Together". These structures could be introduced quite easily into the daily classroom routines. However, all found complex forms of CL like Jigsaw more difficult to implement successfully. One teacher had to constantly remind her pupils to be responsible for each other's learning. Moreover, the preparation of materials for Jigsaw was burdensome for her. The teacher who had the academically weak pupils in her mixed EM2/EM2 class found that pupils had difficulty teaching their peers. In the top class, the teacher reported that the Jigsaw structure worked well. The method generated excitement and the better pupils could teach their peers.

The teachers were also aware that not all the groups had functioned well. Where there were pupils who were arrogant or bossy, arguments took place during group activities. The main problem was one of group discussions being dominated by one member who was not prepared to listen to the opinions of other group members. The teachers found their own method of coping with this problem. Some tried to talk to the difficult pupil and the group members . Only one teacher used the sociometric choices of the pupils and changed the group members. Another teacher left the girls alone, taking the view that "when you (*the girls*) grow up and become an adult, it's a lot worse and if you (*they*) can't tackle a simple situation like that then how are you (*they*) going to grow up in this world?" The pupils in the poorly functioning groups had not acquired the social skills for cooperative

groupwork. The learning of appropriate group behaviour will take time unless they are reinforced in other learning situations in school.

The prevalence of task concerns of the teachers may be explained by the early stages that they were at in the implementation of CL. Three teachers were first-time users of CL. As teachers learn to use CL, they will inevitably encounter difficulties. Some of these problems can be solved when the teachers become more knowledgeable and skillful in their use of CL. Others defy adequate solutions for the time being and teachers would have to come up with good-enough compromises (Fafard, 1992) for the time being. The institutional constraints within the school, particularly the rigidity of the time-table and curriculum disruptions, would be another factor contributing to teachers' concerns about implementing CL.

Perceived effects of CL on pupils and teachers

All four teachers reported positive effects of CL on the academic and social development of their pupils. They reported that pupils' attitude towards SS had improved tremendously. In terms of **academic gains**, pupils were perceived to have benefited in four ways:

- developed a deeper understanding of the content of the subject (Mary)
- better memory of the content of the subject (Jane)
- improved quality of group projects (Jane/Molly/Mary)
- generated more and better ideas in group discussions (Jenny)

In terms of **social gains**, the pupils were perceived by their teachers to have:

- learned to be more patient (Jenny)
- improved relationships among group members, including the development of cross-ethnic friendships (Jenny, Jane)
- developed helping behaviours (Jenny, Jane)
- developed greater responsibility for themselves (Jane)
- developed greater willingness to represent their group (Jane)
- developed better self-esteem (Mary)
- improved leadership skills (Mary)
- learned to take turns (Mary, Molly)
- become more confident (Molly)
- participated more actively in class (all teachers)

The CL experience had also made an impact on the four teachers. By the end of the year, they had developed a deeper and richer understanding of the CL approach and become more confident in using it for their classes. For each teacher, the learning experience was unique as they approached the CL project with different degrees of enthusiasm. Jenny, the EM3 form teacher, mastered new cooperative learning structures and learned to use more complex forms of CL. The CL experience was one of professional renewal for

her and she was highly motivated to continue her use of it. For Jane, the EM1 teacher, she had learned a new teaching method and discovered that her expectation of increased pupil participation was met to some extent. In Mary's case, she had learned more subject content knowledge and derived great personal satisfaction that her pupils were finally enjoying her social studies lessons. For Molly, the teacher with the longest teaching experience, CL presented a welcome change to an old teaching approach which she had been using for many years; she was pleasantly surprised to see an increase in pupil participation during her CL lessons.

It has been the positive effects of CL on their pupils that influenced the teachers to consider using CL the following year. All agreed that the approach was good but they had some reservations about whether they could sustain their use of it. While they could see visible differences in the learning behaviour of their pupils as well as positive effects socially and to some extent academically, they were naturally concerned about their ability to cope with the demands of the heavy academic curriculum.

The four case studies provide some evidence for Rich's argument that teachers' beliefs about schooling and learning can serve as ideological impediments to the use of CL in the classroom. If teachers' ideologies are incongruent with that of CL, they are unlikely to take the initiative to experiment with CL on their own. And if they are directed to use CL in the classroom, the quality of implementation will be shaped by the teachers' ideological beliefs. The process of reshaping CL in the classroom should be investigated further.

The teachers will no doubt need support in their commitment to continue the use of CL. If left unsupported after an introduction to the actual use of CL, there is a real possibility that most of them would be tempted to retain only vestiges of CL activities for their classroom teaching. It has been estimated that only 5% to 10% of participants in a CL workshop will continue to use the cooperative approach over time if ongoing coaching and support are absent (Male, 1989). More will have to be done by training agencies to support the teachers even after their first year of using CL strategies. This raises the issue of the responsibility of project initiators to help develop appropriate forms of teacher support in collaboration with school administrators in order to ensure that CL will take root in schools.

Notes

2 In 1997, the Curriculum Development Institute of Singapore was renamed the Curriculum Planning and Development Division of the Ministry of Education.

3 In the primary educational system in Singapore, EM1 pupils learn English and Mother Tongue (i.e. Chinese, Malay and Tamil) as First Languages, EM2 pupils learn English as a First Language and Mother Tongue as a Second Language and EM3 pupils learn English as a First Language and Mother Tongue as an oral subject. EM1 pupils are perceived to be at a higher

academic achievement level and EM3 pupils at a lower academic achievement level.

4 Pseudonyms, Jane, Jenny, Mary and Molly, are used to protect the identity of the teachers in the study.

References

Bossert, S.T. (1989). Cooperative activities in the classroom. In E.Z. Rothkopf (Ed.), *Review of Research in Education*, Vol 15. Washington, D.C.: AERA.

Fafard, D. (1992). Learning to use cooperative learning: Beyond Daedalus and Icarus. *Journal of Education*, 174 (2), 101 - 117.

Fullan, M. (1991). *The new meaning of educational change*. Toronto: OISE Press.

Johnson, D.W. & Johnson, R.T. (1994). *Learning together and alone. Cooperative, competitive and individualistic learning*. Boston: Allyn & Bacon.

Johnson, D.W., Johnson, R. & Maruyama, G. (1983). Interdependence and interpersonal attraction among heterogenous and homogenous individuals: A theoretical formulation and a meta-analysis of research. *Review of Educational Research*, 53, 5 - 54.

Male, M. (1989). Cooperative learning and staff development. *Cooperation in Education*, 5(1), 4 - 5.

Rich, Y. (1990). Ideological impediments to instructional innovation: The case of cooperative learning. *Teaching and Teacher Education*, 6 (1), 81 - 91.

Sharan, S. (1980). Cooperative learning in small groups: recent methods and effects on achievement, attitudes and ethnic relations. *Review of Educational Research*, 50(2), 241 - 271.

Slavin, S. (1987). Cooperative learning and the cooperative school. *Educational Leadership*, 45(3), 7 - 13.

Slavin, S. (1990). Research on cooperative learning: Consensus and controversy. *Educational Leadership*, 47(4), 52 - 54.